The Interspecies Newsletter

Summer 2002

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The Prisoner of Love

It wasn't supposed to happen this way. Two of us were already funded and busy preparing to travel to the Russian White Sea this July to continue working with beluga whales. Then the politics got nasty. To understand it better, read on. We may still sponsor a trip to Russia this year, but in October, and to visit politicians, not whales. One pleasant outcome of this alteration in plans is that a group of five from Interspecies will travel to the Azores in July to start a new communication project with sperm whales.

–The Editor

Summer 2001. Sitting on the deck of what seems to be the only privately-owned sailboat in the entire White Sea. We're anchored off Solovetsky Island in Arctic Russia. I'm playing a Tibetan meditation bell in an attempt to communicate with the local beluga whales. The pulsing tone of the bell is my "signature", a term denoting a sound certain toothed whale species vocalize to identify individuals within a social group. In essence a signature is a name, and the bell sound is the name I have declared for myself among the local whales. The first time I tried it, a beluga swam around the boat twice, then lifted its head above the water to stare into my face.

My companion in this venture is Rauno Lauhakangas, the Finnish physicist turned whale activist who, for eight years, has labored on both sides of the Russian-Finnish border to ensure protection for these 800 White Sea whales. His strategy begins with hope, freely given to the local Russian people who face an uncertain economy and an increasingly polluted environment.

Seeking solutions to a formidable array of domestic problems, the Karelian Republic adjacent to Finland has turned to its wealthy Scandinavian neighbors for co-development schemes that establish a common northern European heritage. Norway is involved, although in a rather sinister way. Known internationally for flouting the International Whaling Commission's regulations against hunting endangered fin whales, a credible rumor has it that they have quietly paid Russia for a license to hunt belugas off the coast of their adjacent northern border, and then selling the meat to Japan. A knowledgeable source in the anti-whaling movement tells me that, in early 2002, the sale was cancelled when it was determined that the meat contains levels of PCBs and mercury dangerous to human health.

Experience suggests to me that the central government in Moscow seems willing to sell to the highest bidder, the rights to any resource found within its borders, including whales. Russia was one of the world's most active whaling nations into the 1980s, and it retains enough of the infrastructure to resurrect the industry. Also, the Fisheries Ministry in the White Sea military center of Archangelsk has announced that it is studying the potential of opening this White Sea beluga population to a regulated sport hunt. More sobering to our preservation effort, powerful Moscow-based "bosses" are currently test-marketing the sale of living beluga whales to wealthy oceanariums around the world.

The snowball of cumulative threats has finally succeeded to knock this whale researcher off the track of his original mission of exploring beluga language. While Interspecies is ostensibly focused on communication between species, the undeclared open season on these whales has impelled Rauno and I to attempt to protect these animals from the threats. Readers who subscribe to this newsletter to keep informed about what cetaceans are communicating, must bear with me until the fall newsletter, to read a report about sperm whale language.

After ten years spent in search of friendly belugas whales at six Arctic sites from Alaska, to Canada to Russia, I am exceedingly sad to report that this species is being hunted to the point of extinction everywhere I have visited. The goal of communicating with beluga whales is simply impossible to manifest, not because the belugas are non-communicative, but because this species can no longer afford to swim anywhere close to human beings. Because I care about them, I honor a responsibility I feel to protect them. Almost no one else is. I feel like a prisoner of love. Beluga love.

So far, the latest Russian killing initiatives have been vigorously opposed by the Karelian Republican government in Petrozavodsk, located three hundred miles south of the White Sea. Their own official disapproval has largely been influenced by our own significant lobbying efforts. Rauno has undertaken a one-man campaign to establish eco-tourism on the White Sea, promoting it to Karelian officials, biologists, tour agencies, transportation companies, as well as local entrepreneurs on Solovetsky Island. I'm helping any way I'm useful.

This venture has moved inextricably forward without any aid from the well-healed European conservation groups like Greenpeace or The World Wildlife Fund. Actually, Rauno and I have recently expended a far too much energy convincing another well-healed activist group—better left unnamed—that its own sponsorship for these whales has actually been channeled to subsidize the building of a permanent facility to capture whales for the oceanarium trade. It is depressingly naive to give money, earmarked for whales, directly to Russian officials and simply expect them to do what's good for the animals. It either ends up in their own pockets, or they use it to finance whatever "whale project" makes them the greatest amount of money with the least amount of effort.

The World's Biggest Labyrinth

No one doubts that tourism is on the verge of booming in this richly endowed northwestern corner of Russia. The White Sea not only contains herds of beluga whales, but a southern shore studded with 6000 year old petroglyph sites chipped into the granite bedrock by the Finn-Ugric tribes who migrated here after the last ice age. The well preserved glyphs are skillfully carved, depicting animals, ships, and scenes of village life so effusive they have been compared to paintings by Breughel. On Zaitsky Island, within a few miles of the beluga whales' summer habitat, is a remarkable prehistoric site comprising the largest stone labyrinth in the world. Solovetsky Island contains perhaps the most famous medieval monastery in Russia which looms over a boreal landscape within sight of the beluga herds.

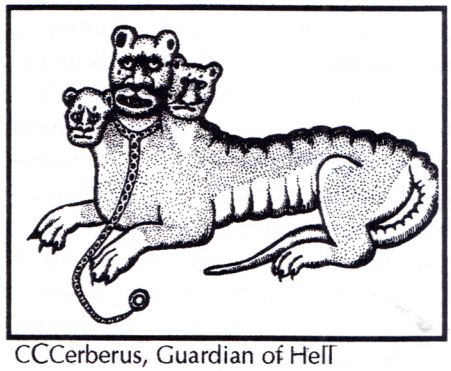
Rauno has bet correctly that Scandinavians will gladly travel to the White Sea to locate their own prehistoric roots while catching a glimpse of the last whales in Europe. It's been his self-appointed job to tell them that such a place exists just a day's train travel from Helsinki. Last year he organized ten tour buses. This summer, 2002, the eco-tour agencies have sold out over twice as many seats within a week of putting them up for sale. Our mutually agreed on "strategy of coexistence", of protecting whales by developing an economy co-dependent on their well-being, seems well underway. Or at least it would appear so.

Its often impossible in Russia for a foreigner to figure out who's actually in control of any situation. The local economic system is feudal. It's run on the surface by myriad public administrators and bureaucrats. Underneath this surface, exists opaque layers of "bosses".

Even though Interspecies may be providing the long-suffering local serfs with the glimmer of a light at the end of their long dim tunnel of history, for any of that to happen, still bosses must be handed "incentives" for "permission" they actually have no legal right to grant and no integrity, interest, or skill to see through to fruition. It is the epitome of an underbelly government devoid of responsibility to its people, and utterly unaccountable to any external agency. It's surreal to recognize that these so called leaders control thousands of nuclear warheads.

We never deal with anyone beyond the middle layers of power. The highest level emanates far away in Moscow, where the powers-that-be operate by sending out spies to report on any rumor about devloping opportunities in the hinterland. They then send their functionaries to investigate. These mid-level opportunists arrive on the local scene camouflaged as government biologists, ministry liaisons, and consultants best identified by the black-leather jackets they wear whether or its hot or cold outside.

In such a manner, Moscow rules today as it has ruled since the time of the Czars and through



CCCerberus, Guardian of Hell

the Soviet regime, stripping money and wrenching resources from the provinces with no thought of giving anything back.

Rauno and I thought we'd sidestepped the intrinsic heavyhandedness of this Russian system by setting up the tour infrastructure well under the bosses' radar. We were idealistic enough to figure that the locals would be so thankful for their new jobs in their own locally-controlled eco-tour industry, that they, themselves would handle the bosses long after we had left the scene.

The Chameleon

My role in this spy-novel scheme deserves some explanation. Rauno has recruited me as a kind of a secret agent whale diplomat. In perfect emulation of the Russian realpolitick that makes it impossible to ever know anybody's true function, my actual job may be best described as acting like a chameleon.

In one crucial meeting with archeologists, I'm introduced as a distinguished American whale behavioralist which, two years later, wangles us a permit to anchor our sailboat right in the middle of the beluga pod for two weeks. Or another meeting. This time I have turned into an acoustics consultant, which softens the usually sour mood of a soft-spoken senior biologist from Moscow, who, we soon deduce, is actually the local whale boss, the man responsible for clandestinely saving his grant money to build a permanent facility to catch beluga whales for oceanariums around the world.

Despite my own various role changes, I mostly serve as Rauno's "American"; what he describes as "a master of the universe, for whom every door in Russia must open". It seems to work. The whale boss soon warms up to the potential of a collaboration. My expertise is amply verified when I grant him a personal tour of my brand new G4 Mac Powerbook. He's never seen anything like it before. In return, he grants me a favor: allowing his talented underling biologists to share their own poorly recorded whale mini-discs with me in trade for a lesson in how my whiz-bang computer can help illuminate their theories about beluga whale language.

The face of Satan, German 17th century

Oh, but their theories are breathtaking. One biologist describes for me the recent hiring of a registered psychic to initiate a chat with the whales, mind to mind. Or an acoustician plays for me recordings of the local beluga pods to demonstrate the most astonishing theory of whale language I have ever heard. Relying on technology that is ten years out of date, he has formulated the revolutionary hypothesis that beluga whale language consists of an echolocated vocabulary encoded within the beats of the harmonic spectrum. In another situation, when the underhanded politics of extinction don't define our relationship, I can imagine devoting my time to helping this talented Russian acoustician test his profound idea.

Rauno sometimes introduces me as a FAMOUS whale musician. This may be my most important role, because the very idea of a celebrity American playing weird and wonderful musical instruments to engage belugas on the remote White Sea serves as a powerful metaphor for attracting Media. TV crews from Finland, Russia, and Canada, as well as several Russian newspaper journalists, have all made the trip to our boat to document my use of Tibetan bells and sophisticated computers to establish a dynamic relationship with these gregarious whales. The urgency of whale preservation is slipped into every interview.

And every so often, while I hold the full attention of the media, the bosses, or the scientists, my nondescript colleague (Rauno refers to himself as "their Finnish Hillbilly") slips away from the boat to meet with local groups of businessmen: hotel managers, building contractors, a bulldozer operator, a forestry official, and on one occasion, a delegation of Norwegian engineers touring the White Sea in search of a valid co-development project. They remark sadly to me, "If only there was a way to verify that the money will ever be used for what it has been designated."

Rauno queries all these new acquaintances. How much will it cost to build a road to the local whalewatching point? What permits do we need? How do we find topographic maps of the area? How much to build a lodge to house tourists and whale researchers from around the world? For those few locals he learns to trust, he eventually pops the touchy question of how much they suppose he will have to pay the whale boss to keep him from impeding Rauno's dream of beluga whale preservation.

We thought the project was a done deal. So many tourists arrived last summer. So many new tourism jobs in a place where local people were living almost entirely on potatoes, bread, and vodka.

With all that hope on the table, why aren't these whales saved yet?

A Nervous Laugh

The influx of tourists blew Rauno's cover, even as he and I prepared to return to the White Sea this summer. The senior whale biologist boss we had been courting, finally comprehended that, somehow, whale watching was developing beyond his control. Clearly, that Finn and

his American were unlike anyone he'd ever dealt with before. In just two years time, whale tourism had grown logarithmically, *and* democratically. There seemed little chance of reining it in. Clearly a kickback was in order.

Since Rauno and I had built an eco-tourism industry without even a word to him, it seemed to us we might also succeed in establishing our secondary dream of whalewatching run *entirely* from the shore, avoiding the noisy boats that inevitably impact whales who rely 100% on sound to locate their prey.

In March 2002, the Russian government responded, issuing White Sea Decree #1551. Although it never mentions Rauno nor I by name, the two of us have shared a nervous laugh to recognize that the decree is targeted directly at our activities. It prohibits all nature tourism in Solovetsky Island. All walking along the coast or in the forest is prohibited to foreigners. All cameras and tape recorders are illegal to foreigners visiting the island.

Worst of all, the decree permits 50 whales per year to be killed or taken from this population of 800. This includes sport hunting, captures, and/or commercial killing.

If it stands, these beluga whales will soon be extinct. It's no surprise to learn that the decree is regulated by the senior biologist we have dealt with so often.

Just a month after the decree was passed, our own project was awarded the equivalent of about $100,000 by the Barents Sea Commission, an adjunct of the European Union, comprised of the Scandinavian countries as well as Russia. It is earmarked to develop eco-tourism on the White Sea, and specifically to build a nature path from the local town to the beluga feeding area, as well as a shore viewing station at beluga point.

I have recently cancelled my plans to travel to the White Sea this summer. Rauno remains undecided. Its clearly dangerous for us to show our faces on Solovetsky island.

But it's also out of our hands. Initial studies to determine the site and cost of the nature path will commence as scheduled. The Barents Sea Commission's own people will manage the project. The path and the visitor's lodge are being designed by Rauno, and will be built by local workers. The European Union's involvement suggests that the decree's attempt to kill both the whales and tourism has been trumped.

Whether the whales make it through this dangerous time is less clear. It's not entirely impossible to imagine that some frustrated boss could vent his anger on the whales themselves. They are slow swimmers and love to parade their young ones within a few meters of shore to feed on the upwelling of herring. Something similar recently happened in northern California. After a redwood forest had essentially been saved by a legion of young tree-sitters, a vandal with a chain saw arrived at night to cut down the largest, most symbolic tree.

Even as I write, Rauno is attending a meeting with the whale boss. He writes that our friend has just signed a personally-lucrative agreement not to forbid whale watching this summer. More promising, the man himself has proposed that we help him establish a beluga language acoustic center on the White Sea, with himself as its director. If the envisioned center is well-equipped, and if it becomes a bustling place with international researchers and innovative studies, we believe the man's other idea about killing whales for profit must inevitably wither.

Rauno and I have recently discussed our own next step, probably a visit, next fall, to the White Sea capitol city of Archangelsk. We hope to get a personal audience with the governor and various ministers to show my Powerbook presentation that focuses on petroglyphs, beluga whale language, and eco-tourism as a viable tool for developing the impoverished economy of this Russian hinterland.

— Jim Nollman, Jun 2002

Business as Ecosystem

Bill Shireman, © 2001, Global Futures Foundation.

The business ecosystem is comprised of a corporate core, plus its workplace, community, marketplace, and environment. Business should be, at once, a machine, a learning organization, and a system of innovation and transformation. Unfortunately, the productivity unleashed by the machine model cultivates a worldview in which all value is material in form. It is a worldview in which materialism is not simply an obsessive drive to accumulate things, but a belief system that defines the nature of reality. This materialist mindset creates a moral dilemma. Consumers are drawing down on the gifts of nature. As consumers, our species has become a plague on the earth.

Nature is a creative system. For 3.8 billion years it has taken a finite supply of raw materials and a steady flow of energy from the sun, and created an ever-increasing array of creatures, qualities, and capacities. Take any problem that anyone in business has, and you be certain that nature faced it, and probably overcame it, millions of years ago.

When I first visited a rainforest in 1995, something surprised me. It looks like a place of great resource abundance, to feed all that growth. But the rainforest is short of capital. Soils are thin. Minerals are leached quickly by the flow of rain. Even water is in short supply on the forest floor. It is captured by the plants and animals above. Up in the canopy, plants jockey continuously to capture a stream of sunlight. The rainforest's energy crisis never ends.

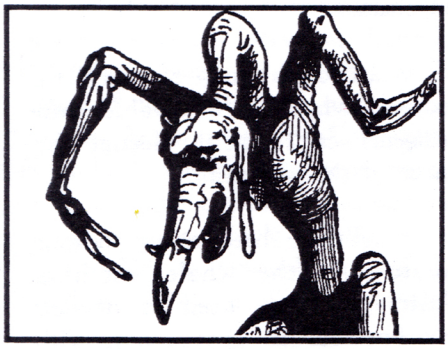
Yet the rainforest is the most creative system on earth, home to two thirds of the planet's biodiversity. The lesson is that limits are the catalyst to creativity.

Once, in Costa Rica, I boarded a small boat and began a journey downriver. Around every turn, birds were feeding on the rich array of insects and fish that populated the mangrove swamps.

The survival strategy of mangroves is high fertility and fast growth. This pioneer plant builds the foundation for the rainforest, taking root at the verge between forest and water. They spread quickly, never pausing to adapt to the subtleties of their environment, the way successor plants do. As they spread, they create the outline of a web. In the spaces between them, they create niches, with their own unique characteristics of light, water, and resources. Into these niches, myriad creatures begin to appear. Insects, fish, plants, and birds.

Oddly enough, a mangrove swamp is not a friendly place for a mangrove plant. Debris builds up to form soil, leaving the mangrove plants high and dry, atop the very ecosystem they helped form. There, lacking the nutrients they require, they die. But in the process, the mangrove creates an ecological fabric, a place for a rich forest ecosystem.

Mangroves are analogous to today's industrial economy. Left to their own devices, the pioneer industrial economy would deplete the environment of all its resources, if they could. But like the mangrove, industry's pioneer machines are creating a foundation for a richer, more resilient human ecosystem. The imperative now, as we reach the apex of mangrove growth, is to populate those niches with a rich variety of human products, services, creations and cultures.



The Devil, woodcut, 15th Century

Grackle Language

(This original piece of homegrown cognitive science was received by Interspecies as an anonymous email)

The boat-tailed grackle is a fully conversant animal. Although it's miniscule brain size would seem to deny it the attribute of language, in fact its brain is about the same size as a parrot's or a mynah's. My own grackle study took place over five winters near Fort Myers Beach Florida. Ther were five birds involved. I named the lead speaker in the flock, Birdy. Birdy proved capable of intelligent conversation using long and short whistles which I denote here as symbols.

Birdy communicates to me such subjects as real time observation, reason, and interaction with humans as well as other species. After an interaction that introduces a new call/symbol, Birdy will then spend several hours or even days introducing variants of this new symbol, giving me many aids to consider the symbol's meaning within our conversation

My animal communications research is based on psychic talent, the ability to impart knowledge telepathically both unconsciously as a continuous link and consciously with directed image and suggested physical activity or attitude. I assume the ability is common among animal trainers.

I began speaking with the grackles while working at a tomato packing plant during winter 1993. In the past I have conducted language research with cicada, frogs, dolphin and manatee. I overheard a grackle eating atop a telephone pole whistling, "-.. .-.." The grackle had just finished a meal and was wiping his beak. Soon thereafter, I realized this same 'tree-eat' symbol was being used by three other distinct flocks.

Most animals are shy of humans for good reason. I fed the flock wet dog food but the grackles remained wary. However, I soon learned that picking up a garbage can lid and banging it with a stick while standing over the food spread on the street brought them in.

Our first feeding, using "-" and ".-.." with a flock, was auspicious. Birdy and the flock began to communicate clearly, with intelligence and independent of my direction. I feed first then communicate if the birds are communicative. Normal dog training stretched to human learning is effective. Using symbols for hunger "-." or "-..", depends how hungry you or they are, patting the stomach, pointing to the food "-" or meat "~." and the feeding area ".-.-." on the ground "~" will yield results when the grackles are in a communications mode. A tree or flat roof edge at the feeding area works well if adjacent to a green lawn.

Experiment with a sound projecting surface or cavity and camouflage. Avoid speech, and avoid thinking aggressively. Repeat the grackles calls when they're not paying attention, point to food or feeding area, use the appropriate whistles then develop further language capacity.

As mentioned, the grackle will remember, reflect on, then use symbols days after you suggest them. The flock will luxuriate bathing in a lawn trough near a group perch. Sprinkle cracked corn in the water and along the trough's sides. Now you have a language class!

One of the birds, Fred Grackle, has one foot. Fred was absent for several days, he flew east toward a golf course above the bay. I asked the flock with whistles, thought and English, pointing to one foot (I'm two foot, ' .. ') just where Fred had gone to? Our first complex interaction! The birds danced, pointed with beaks to one foot whistling "~." "~." and "." "." which came to understand as meaning "dead, dead!!"

I asked Birdy how grackles got their name. Birdy sang out, "at sunrise, at sunrise", "~. , ~.", like a call of joy from a rooster each morning.

One morning, Birdy moved three trees westward as the sun moved into the morning sky and then called "~.", "~..", "~..." meaning "sunrise" , "noon", and "sunset". It was the grackle's way of saying "west" while tree hopping.

I try not to project human emotion onto the grackles but I must say they sound and act enthusiastic when learning.

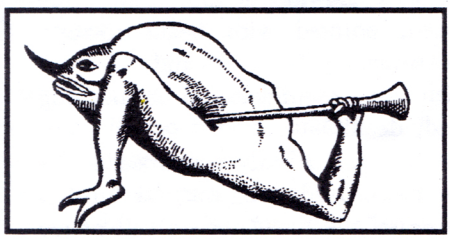
Birdy's one human sounding whistle is "eat eat" or "~ ~".

Clouds at sunrise brought an opportunity to work on light and dark as the sun rose then disappeared behind the house. We sang "~. ~." and "~ ~ ~". I swung my arm upward to the sun position and asked ". . ." or "sun"? Birdy answered ".·. ·." or "atop tree", height!

Cooking breakfast at dawn, a steaming pot of grits, tea, a few feet from canal's edge, I heard an original call "~ ~". Looking up then down to locate the source, I soon noticed a very large glistening green grinning alligator covered with wet duckweed about six feet from the grits. I flinched to run and the gator slid back in the water. "~"!

The Interspecies Casio Watch

Casio Corporation has just granted us seed funding to delve deeper into the mystery of whale language. We will use it to help pay for our July 2002 expedition to the Azores. To establish long term support of our activities, the company has just released a new watch dubbed the "Interspecies Watch", with a percentage of the proceeds going to Interspecies. Watch for it.



Satan as a musician, Pieter Breughel

Book Reviews

The two books reviewed below promote themes about whales and nature as different from one another as is possible. So different, in fact, I considered that I might be dishonoring both authors by suggesting that their themes ultimately reflect the same struggle of human beings attempting to discover a working relationship with nature. Both books may be a bit difficult to find, which is why I've added the publisher's websites, just in case you decide to read them.

The Truth Behind the Whaling Dispute

By Masayuki Komatsu, translated by Shigeko Misaki. To order this book, and also, find more info about the Japanese Whaling Industry from their own perspective, go either to www.whalesci.org or www.jp-whaling-assn.com

Mr. Komatsu was the spokesman for the Japanese delegation at the recent meeting of the International Whaling Commission. At different moments he was either a firebrand playing up to the Japanese media, or a cool and devious chess player, essentially using whale quotas like bargaining chips in an ultimately futile attempt to expand the scope of the Japan's whale-killing operations.

At one point in the week-long proceedings, he boldly accused the US delegation of, on the one hand, upholding a double standard for encouraging the Makah to start whaling again, and on the other, voting down a vaguely similar Japanese proposal to open up Minke whaling at traditional coastal whaling sites in Japan. Quite honestly, his point had some merit, when one considers that the Makah have not whaled for over 70 years, and that they can not honestly be regarded as an aboriginal subsistence culture. Sadly, the convoluted result of this multi-leveled and deceitful impasse was that the Makah got their quota while valid aboriginal Inuit cultures in Siberia and Alaska were denied their quotas for the next year.

Just as troubling, was Komatsu's self-serving lectures to the Japanese media that more whales must be killed or all the fish in the ocean will soon disappear. As expected, his lectures never made mention of the fact that the demise of so many Japanese fisheries is caused entirely by wanton overfishing by Japanese fishermen. Furthermore the Japanese whaling industry focuses on killing minkes, and bryde's whales, neither of which eats fish.

We're left with a work kindly described as arrogant. Komatsu not only explains why Japan ought to be given free rein to kill all the whales it desires, but also how the so-called "environmental" west has no moral right whatsoever to protect whales. As such, the title would seem more accurate if the publisher had spelled the word "truth" using a small "t".

...Humans must continue to catch fish. This can not be stopped in the face of the expected food shortage. In summary, so that mankind can utilize marine species for food in a sustainable manner, it is necessary to harvest evenly from every possible component of the ocean ecosystem. Therefore, whales, being no exception, would have to be culled to keep the balance of the ecosystem, as they are the top predators on the food chain.

...Prohibition of whaling "because whales are lovable and intelligent" can certainly disrupt the balance of the ecosystem.

...I have been saying to tour operators of the whale watching industry that they need to develop their business in cooperation with

fishermen. For example, in Kochi prefecture, the whale watching business is being developed with 20 to 25 Bryde's whales. It is estimated that these whales feed on fish that equals one tenth of the total fish fished by the fishermen in Kochi prefecture. The fishery in Kochi was a thriving industry in the past, but now it has declined to a fraction of the past production levels. While a great number of fishermen are being driven out of the their jobs, the whale watching industry is thriving. If this is the situation to be touted about, I think there is a problem here. Whale watching may be a respectable business only if it can co-exist with fisheries, or with whaling. Whale watching should never be allowed to replace whaling.

...We have developed our fishery over history to a very high level, which can be used as a tool for setting the ecosystem in balance. For instance, when we take our children to an aquarium where they can see sardines swimming, we should not confuse our children by saying "sardines are lovely so you should not eat them." Of course parents must not think that way either.

How Musical is a Whale

by Dario Martinelli. Order this book over the Internet through The International Semiotics Institute at www.isisemiotics.fi/

Marine mammal biologists seem on the verge of accepting the fact that certain cetaceans display various aspects of culture. There was even a seminar on the subject at the most recent International Marine Mammal Convention held in Vancouver in december 2001. Whale culture is, also, the declared theme of the American Cetacean Society's upcoming conference to be held in Seattle in October 2002.

Although this premise is, perhaps, not a difficult assumption to swallow if you are a reader of this newsletter, it remains difficult to explicate if you happen to be bound by the rigorous rationale and methodology used by biologists to study natural systems and animal behavior. Common themes now being explored to further the cause of whale culture include the orca's matrilineal family structure as well as the cooperative feeding tactics as well as the complex courting songs of the humpback whales.

As they come to accept the premise of culture for cetaceans, biologists are beginning to observe and (in more and more instances) *interact with* various whale species as congregations of individuals rather than as aggregations of instinct-bound clones.

If it sounds like the scientific community is starting to pay closer attention to what we at Interspecies Inc. have been doing for 25 years, then you are correct. It also explains why biologists have begun to collaborate with us.

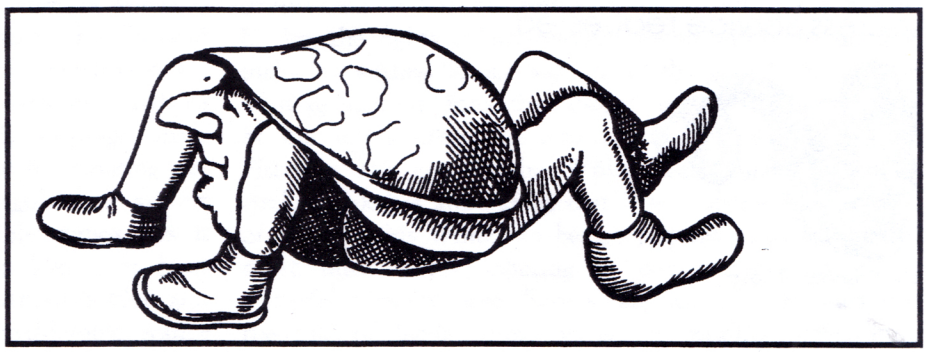
If indeed, whales have culture, then we do well to ask if they also have art, law, ethics, and politics. This new book of over 300 pages was written as the doctoral dissertation of a professor at Helsinki Finland University. It makes the heady case that some whales even have music.

...What seems to be certain, is that instinct was often a functional and easy theoretical tool for the explanation of behaviors difficult to account for.

...To act musically means to use sounds from among all those available to a given subject. Such a selection occurs first of all in the domain of timbres, but dynamics and intensity are also relevant. Although humans are possibly the species provided with the widest variety of sounds (with or without the help of technology), many animal species are capable of producing a more or less differentiated range of timbres and dynamics.

...*Antiphonal:* This is when singers alternate during performance. Antiphons may be performed on the same pitch or, more interestingly, at different pitch levels. In such a case, one of the partners repeats a phrase by transposing it, rather than simply completing it. We can cite the duet of African wood owls (Ciccabi woodfordi) in which the paire holds a peaceful dialogue by repeating the same melodic-rhythmic ritornello , but exactly an octave apart.

...Nollman's orcas were not interested as species, or at least not necessarily. His musical partners were usually the same individuals, thus proving once again that every species is a conglomerate of individuals and not of clones. The orcas were also more interested in the emotional aspects of his music rather than technique.



Turtle Man walking slow enough to perceive whale culture, Pieter Breughel